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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/943,890	08/30/2001	Lenny Lipton	300.68	2077

7590 04/23/2003

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EXAMINER

CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/943,890

Applicant(s)

LIPTON ET AL.

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features recited in claim 5, in particularly the closed chamber affixed over the lenticles with the lenticles facing outwardly away from the display screen must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

### *Claim Objections*

2. **Claims 4 and 12 are objected** to because of the following informalities: The phrase "the fluid reservoir" recited in claim 4 is vague since it lacks proper antecedent basis from its base claim. The term "floropolymer" recited in claim 12 is wrong. It should read "fluoropolymer". Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 5-7, 9, and 19 are rejected under 35 U.S.C. 112, first paragraph**, as containing subject matter which was not described in the specification in such a way as to **enable** one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.
4. The specification fails to teach how could the lenticular screen being oriented *outwardly* away from the display screen yet is capable of retaining the optically clear fluid introduced into the

lenticular screen. Figure 3 of the instant application discloses that the lenticular screen is oriented outwardly away from the display screen where the optically clear fluid will not be able to be introduced to it and retained in it. Clarifications are required. Claims 6-7 inherit the rejection from their based claim.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Battersby (PN. 6,069,650) in view of the patent issued to Goto (PN. 6,046,855).**

**Battersby** teaches an *autostereoscopic display system* (please see Figures 1-2) that is comprised of a liquid crystal display panel (10) serves as the display having a *display screen* and a *lenticular means* (15) with an array of *lenticular elements* (16) together serve as the *lenticular screen* that is aligned in juxtaposition with the display screen. The lenticular elements are formed at one side of the lenticular means.

This reference has met all the limitations of the claims with the exception that it does not teach explicitly that the lenticular elements are *facing inwardly toward* the display screen and having an *antireflective* coating on another side of the lenticular means. **Goto** in the same field of endeavor teaches a lenticular screen (10, Figure 1A) for an image projection system wherein the lenticles are facing inwardly toward the image projector (2) or display screen. Goto also teaches that the light-emitting

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surface (14) of the lenticular screen may be coated with a layer of *antireflection layer* for the purpose of reducing unwanted reflection at the light-emitting surface in order to improve the contrast of the image displayed, (please see column 9, lines 20-25). It would then have been obvious to one skilled in the art at time of invention to apply the teachings of Goto to arrange the lenticles of the lenticular screen facing inwardly toward the display as an obvious design choice to provide an alternative arrangement for the display system, (it is noted that the specification fails to teach by having the lenticles either facing inwardly or outwardly with respect to the display screen would have any criticality or would be critical to overcome any problem in the prior art), and to provide an antireflective layer at the light emitting surface of the lenticular means for the benefit of improving the contrast of the image displayed by the autostereoscopic display system.

With regard to claim 22, the method for improving the clarity of an autostereoscopic display system is met by the teachings of Battersby and Goto as stated in the paragraphs above.

6. **Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Battersby in view of the patent issued to Goto as applied to claim 1 above, and further in view of the patent issued to Stoner (PN. 6,288,846).**

The autostereoscopic display system taught by Battersby in view of the teachings of Goto as applied to claim 1 above has met all the limitations of the claims. Battersby further teaches that a *closed chamber* that is filled by *liquid crystal material* (38, Figure 6) is *affixed between the lenticular sheet* (30) with lenticles (16) and the *display screen* such that the refractive index of the liquid crystal material may be changed so that the function of the lenticular means (15) is changed between the function of lenticular screen to create the autostereoscopic display and the function of transparent sheet to create ordinary 2D image display, (please see columns 1-2). The change in function is achieved by changing the index of refraction of the liquid crystal material so that it is either miss-matching or matching the index of

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refraction of the lenticular sheet. This reference however does not teach *explicitly* that the liquid crystal material is *introduced into* or *removed from* the chamber to achieve the change in function of the lenticular means. Stoner in the same field of endeavor teaches that by introducing an optical liquid with a refractive index matching that of the material of optical elements having surface structures into the space or chamber between the surfaces of the elements the optical property of the surface structures can be altered or disappear completely, (please see the abstract, columns 2-3). Stoner further teaches that fluid *pump* (52, Figure 5) with the form of *syringes* may be used to introduce or removing index-matching fluid into or from the closed chamber formed between the optical elements so that the optical effect of the optical elements is altered, (please see Figure 5 and column 8, lines 20-33). Stoner also teaches that different types of *fluid handling systems* may be used. It is known in the art that the syringe implicitly include the *reservoir* for holding the index-matching fluid and the *valve* for regulate the speed of ministering the fluid. It would then have been obvious to one skilled in the art at the time of invention to apply the teachings of Stoner to modify the autostereoscopic display system of Battersby accordingly for the benefit of using alternative means and arrangement that does not require to set up electric field as for the liquid crystal material to change the function of the lenticular means so that more variety of choices of the index matching fluid may be used to enable the system be switched between stereoscopic and regular 2D display mode.

7. **Claims 5-7, 8-9, 12-17, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Battersby in view of the patent issued to Stoner.**

**Battersby** teaches an *autostereoscopic display system* (please see Figures 1-2) that is comprised of a liquid crystal display panel (10) serves as the display having a *display screen* and a *lenticular means* (15) with an array of *lenticular elements* (16) together serve as the *lenticular screen*, that is aligned in *juxtaposition* with the display screen. The lenticular elements or the lenticles are formed at *one side of*

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*the lenticular means*, and the lenticles are *facing outwardly away* from the display screen, (please see Figure 2). Battersby further teaches that a *closed chamber that is filled by liquid crystal material* (38, Figure 6) is affixed between the *lenticular sheet* (30) with lenticles (16) and the *display screen* or is simply affixed over the lenticular elements (as in Figure 3) such that the refractive index of the liquid crystal material may be changed so that the function of the lenticular means (15) is changed between the function of lenticular screen to create the autostereoscopic display and the function of transparent sheet to create ordinary 2D image display; (please see columns 1-2). The change in function is achieved by changing the index of refraction of the liquid crystal material so that it is either miss-matching or matching the index of refraction of the lenticular elements.

This reference however does not teach explicitly that the liquid crystal material is *introduced into or removed from* the chamber to achieve the changing in function of the lenticular means. Stoner in the same field of endeavor teaches that by introducing an optical liquid with a refractive index matching that of the material of optical elements having surface structures into the space or chamber between the surfaces of the elements the optical property of the surface structures can be altered or disappear completely; (please see the abstract, columns 2-3). Stoner also teaches that a *fluid pump* (52, Figure 5) with the form of *syringe* may be used to introduce or remove index-matching fluid into or from the closed chamber formed between the optical elements so that the optical effect of the optical elements may be altered; (please see Figure 5 and column 8, lines 20-33). Stoner further teaches that different types of fluid handling systems may be used. The *syringe* implicitly includes a *reservoir* for holding the index-matching fluid and a valve for regulate the speed of ministering the fluid. It would then have been obvious to one skilled in the art at the time of the invention being made to apply the teachings of Stoner to modify the autostereoscopic display system of Battersby accordingly for the benefit of using alternative means and arrangement that does not require to set up electric field as for liquid crystal material to change

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the function of the lenticular means so that more variety of choices of the index matching fluid may be utilized to allow the system be switched between stereoscopic and regular 2D display mode.

With regard to claim 12, these references do not teach explicitly that the optical fluid is a fluoropolymer. However as indicated by Battersby and Stoner, the lenticular screen and optical elements are generally made of polymer material, (please column 1 of Battersby and column 9-10 of Stoner) and the idea is to have the refractive index of the index-matching fluid (or optical fluid) to be substantially the same as the refractive index of the lenticules, it would then have been obvious to one skilled in the art to select the material that is suitable as the index matching fluid. Also fluoropolymer is well known optical material in the art for general optical application it would have been obvious to one skilled in the art to select the material based on its suitability as the index matching fluid.

With regard to claims 13-14, both Battersby and Stoner teach that the refractive index of the optical fluid need to be substantially the same as the refractive index of the lenticular elements.

With regard to claims 15-16, Battersby teaches that the lenticular means (15) or lenticular screen has lenticular elements (16) or lenticules disposed at one side of the substrate wherein the substrate may include glass plate (36, Figures 3 and 6).

- 8. Claims 10-11, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Battersby in view of the patent issued to Stoner as applied to claims 8 and 18 above, and further in view of the patent issued to Goto.**

The autostereoscopic display system taught by Battersby in combination with the teachings of Stoner as described for claims 8 and 18 above have met all the limitations of the claims. Battersby teaches that the lenticular elements in the lenticular means are facing outwardly away from the display but it does not teach explicitly that the lenticular elements are facing inwardly toward the display screen and these references fail to teach to include an antireflective coating on another side of the lenticular means.



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Goto in the same field of endeavor teaches a *lenticular screen* (10, Figure 1A) for an *image projection system* wherein the lenticles are *facing* inwardly toward the image projector (2) or display screen. Goto also teaches that the light-emitting surface (14) of the lenticular screen may be coated with a layer of *antireflection* layer for the purpose of reducing unwanted reflection at the light-emitting surface in order to improve the contrast of the image displayed, (please see column 9, lines 20-25). It would then have been obvious to one skilled in the art at time of invention to apply the teachings of Goto to arrange the lenticles of the lenticular screen facing inwardly toward the display as an obvious design variation to provide an alternative arrangement for the display system, (it is noted that the specification fails to teach by having the lenticles facing inwardly or outwardly with respect to the display screen would have any criticality and would overcome any problem in the prior art), and to provide an antireflective layer at the light emitting surface of the lenticular means for the benefit of improving the contrast of the image displayed by the autostereoscopic display system.

### *Conclusion*

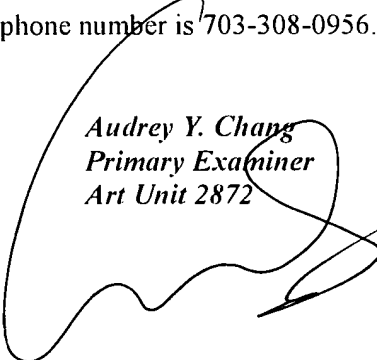
9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. *US patent issued to Martin et al (PN. 6,481,849)* teaches to use a lenticular lens having a closed chamber affixed over it that is filled with index matching fluid for tuning the lenticular lens to either having the lens function for stereoscopic image display or not having the lens effect.
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

*Audrey Y. Chang*  
*Primary Examiner*  
*Art Unit 2872*



A. Chang, Ph.D.  
April 18, 2003